

Title: Evaluation of post harvest dormancy of cereal cultivars. (4W2755)

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Objectives: To evaluate the post harvest dormancy of cereal cultivars. Post harvest dormancy can be an indicator of the potential of cultivar to produce volunteer plants in the succeeding crop.

Results:

Seed produced by the off-station barley variety trials were evaluated for post harvest dormancy at 15C (59F). Two replications of seed from each site tested. The germinations were conducted in late November. September is the preferred time to do the post harvest dormancy. However, harvesting and harvest sample processing were still in process. The barley seed was not in good condition. There was fair number of dead seed in some of the seed lots. The harvest conditions were not ideal and some crops stood in the field for awhile after they were ripe. Only the live seed were used in making percent germination calculations.

The germination rate was a quicker for the Denton produced seed than the seed produced at CARC. Differences in locations have been observed in other years. However, it may be due to the particular germinator each trial was placed in. Metcalfe and Harrington had the quickest germination for the CARC seed with 96 h germinations of 4.4% and 67.5%. Champion, Craft, Goldeneye, Haxby, and Pinnacle were below the 43% germinated after 96 h. Geraldine's germinated over a longer period, with 15.7 % of the germination occurring between 120 h and 168 h (Table 1). The Denton seed had four entries, Conrad, Harrington, Hockett, Metcalfe, and Pinnacle with 96 h germination levels above 80%. Champion, Goldeneye, and Haxby had 96 h germination levels below 70% with Champion being the lowest at 41.1%. Again Geraldine had a higher portion of its seed germinate in the 120 to 168 h interval. This wide spread in Geraldine's germination period suggest the seed may have been a mixture for both locations.

Summary:

Differences of 10 % to 20% in percent germination that has occurred after 96 hours may seem trivial. However, it appears to have significant effect in the field. The tendency of Hector barley to produce volunteer plants and for Clark barley to not volunteer was widely observed in the 1980s. Yet in fall germination trials, their 96 hour germination might differ by only 10% to 30%.

Funding Summary:

Expenditure information to be provided by OSP
No other grant support for this project

MWBC FY2011 Grant Submission Plans:

It is planned to submit this project for funding consideration in the next fiscal year.

Table 1. 2009 Evaluation of post harvest dormancy CARC-NTRC barley varieties.
Exp 36DRM Central Agricultural Research Center, Moccasin Montana.

	96	120	168	Final
	Hours	Hours	Hours	Count
	%	%	%	%
Champion	41.1	54.7	2.2	2.2
Conrad	68.5	25.8	4.7	1.1
Craft	40.2	50.8	9.1	0.0
Geraldine	58.9	18.1	15.7	7.3
Goldeneye	42.8	52.8	3.3	1.1
Harrington	67.5	27.7	2.4	2.5
Haxby	41.3	47.1	4.7	7.1
Hockett	64.5	25.2	5.8	4.7
Metcalfe	74.4	17.1	4.9	3.7
Pinnacle	39.0	50.0	9.9	1.3
Mean	53.8	36.9	6.24	3.075
P-value	0.00	0.00	0.07	0.56
CV1	12.56	12.75	56.57	122.5
LSD 0.05	15.29	10.64	ns	ns

Germinator temperature: 15° C
Placed in germinator: 20-Nov-09

Table 2. 2009 Evaluation of post harvest dormancy Denton barley varieties.
Exp 36DRM Central Agricultural Research Center, Moccasin Montana.

	96	120	168	Final
	Hours	Hours	Hours	Count
	%	%	%	%
Champion	56.0	15.0	3.2	25.9
Conrad	88.0	2.2	7.7	2.2
Craft	76.4	9.5	6.7	7.5
Geraldine	75.0	7.3	14.6	3.2
Goldeneye	67.7	8.4	15.6	8.4
Harrington	93.5	1.1	3.3	2.2
Haxby	62.5	10.5	15.7	11.5
Hockett	83.8	5.3	9.0	2.0
Metcalfe	88.8	10.2	0.0	1.1
Pinnacle	84.4	2.1	8.4	5.3
Mean	77.59	7.15	8.39	6.90
P-value	0.01	0.16	0.65	0.00
CV1	10.15	62.34	104.5	41.83
LSD 0.05	17.82	ns	ns	6.53

Germinator temperature: 15° C
Placed in germinator: 20-Nov-09